

Air Quality Permit

Issued to: Cremation or Funeral Gallery
29 8th St. West
Billings, MT 59101-2914

Permit #3116-00
Application Submitted: 05/02/00
Preliminary Determination Issued: 01/26/01
Department Determination Issued: 02/13/01
Final Permit Issued: 03/01/01
AFS #: 111-0031

An air quality permit with conditions is hereby granted to Cremation or Funeral Gallery, pursuant to Sections 75-2-204 and 211 of the Montana Code Annotated (MCA), as amended, and the Administrative Rules of Montana (ARM) 17.8.701, *et seq.*, as amended, for the following:

SECTION I: Permitted Facilities

A. Facility Location

A human crematorium located at 29 8th St. West in Billings, Montana. The legal description is Section 9, Township 1 South, Range 26 East in Yellowstone County, Montana. The list of permitted equipment can be found in Section I of the permit analysis.

B. Current Permit Action

This current permitting action is a transfer of permitting authority from Yellowstone County to the State of Montana. The facility has not changed its operation or configuration, but the existing Yellowstone County permit must be re-issued as a state permit. Permit #3116-00 replaces all Yellowstone County air quality permits and any other air quality permits held by Cremation or Funeral Gallery for this equipment.

SECTION II: Limitations and Conditions

A. Operational Requirements

1. Cremation or Funeral Gallery shall operate the 1996 B & L incinerator/crematorium as specified in their application for their Montana Air Quality Permit #3116-00 and all supporting documentation (ARM 17.8.710).
2. Cremation or Funeral Gallery shall not incinerate/cremate any material other than human remains and the corresponding container (ARM 17.8.710).
3. The secondary chamber operating temperature shall be maintained above 1400°F. The operating temperature shall be maintained during operation and for ½ hour after the feed has stopped (ARM 17.8.715).

B. Emission Limitations and Conditions

Cremation or Funeral Gallery shall not cause or authorize to be discharged into the atmosphere from the incinerator/crematorium:

1. Any visible emissions that exhibit an opacity of 10% or greater (ARM 17.8.715), and
2. Any particulate emissions in excess of 0.10 gr/dscf corrected to 12% CO₂ (ARM 17.8.715).

C. Monitoring Requirements

1. Cremation or Funeral Gallery shall install, calibrate, maintain and operate continuous monitoring and recording equipment to measure the secondary chamber exit temperature. Cremation or Funeral Gallery shall also record the daily quantity of material incinerated/cremated and daily hours of operation. This data shall be maintained by Cremation or Funeral Gallery on site for 5 years (ARM 17.8.710).
2. The Department of Environmental Quality (department) may require testing (ARM 17.8.105).
3. All compliance source tests shall conform to the requirements of the Montana Source Test Protocol and Procedures Manual (ARM 17.8.106)

D. Operational Reporting Requirement

1. Cremation or Funeral Gallery shall supply the department with annual production information for all emission points, as required by the department in the annual emission inventory request. The request will include, but is not limited to, all sources of emissions identified in Section I of the permit analysis. Production information shall be gathered on a calendar-year basis and submitted to the department by the date required in the emission inventory request. Information shall be in the units required by the department.

In addition, Cremation or Funeral Gallery shall submit the following information annually to the department. This information is required for the annual emission inventory, as well as to verify compliance with permit conditions (ARM 17.8.505).

- a. Amount of material incinerated/cremated (lb/year)
 - b. Annual hours of operation of the incinerator/crematorium
2. Cremation or Funeral Gallery shall notify the department of any construction or improvement project conducted, pursuant to ARM 17.8.705(1)(r), that would include a change in control equipment, stack height, stack diameter, stack flow, stack gas temperature, source location, or fuel specifications, or would result in an increase in source capacity above its permitted operation or the addition of a new emission unit. The notice must be submitted to the department, in writing, 10 days prior to start up or use of the proposed de minimis change, or as soon as reasonably practicable in the event of an unanticipated circumstance causing the de minimis change, and must include the information requested in ARM 17.8.705(1)(r)(iv) (ARM 17.8.705).
3. All records compiled in accordance with this permit must be maintained by Cremation or Funeral Gallery as a permanent business record for at least 5 years following the date of the measurement, available at the plant site for inspection by the department, and submitted to the department upon request (ARM 17.8.710).

Section III: General Conditions

- A. Inspection - Cremation or Funeral Gallery shall allow the department's representatives access to the source at all reasonable times for the purpose of making inspections or surveys, collecting samples, obtaining data, auditing any monitoring equipment (CEMS, CERMS) or observing any monitoring or testing, and otherwise conducting all necessary functions related to this permit.
- B. Waiver - The permit and all the terms, conditions, and matters stated herein shall be deemed accepted if Cremation or Funeral Gallery fails to appeal as indicated below.

- C. Compliance with Statutes and Regulations - Nothing in this permit shall be construed as relieving Cremation or Funeral Gallery of the responsibility for complying with any applicable federal or Montana statute, rule or standard, except as specifically provided in ARM 17.8.701, *et seq.* (ARM 17.8.717).
- D. Enforcement - Violations of limitations, conditions and requirements contained herein may constitute grounds for permit revocation, penalties or other enforcement as specified in Section 75-2-401 *et seq.*, MCA.
- E. Appeals - Any person or persons who are jointly or severally adversely affected by the department's decision may request, within 15 days after the department renders its decision, upon affidavit setting forth the grounds therefor, a hearing before the Board of Environmental Review (Board). A hearing shall be held under the provisions of the Montana Administrative Procedures Act. The department's decision on the application is not final unless 15 days have elapsed and there is no request for a hearing under this section. The filing of a request for a hearing postpones the effective date of the department's decision until conclusion of the hearing and issuance of a final decision by the Board.
- F. Permit Inspection - As required by ARM 17.8.716, Inspection of Permit, a copy of the air quality permit shall be made available for inspection by department personnel at the location of the permitted source.
- G. Permit Fees - Pursuant to Section 75-2-220, MCA, as amended by the 1991 Legislature, failure to pay the annual operation fee by Cremation or Funeral Gallery may be grounds for revocation of this permit, as required by that Section and rules adopted thereunder by the Board.

Permit Analysis
Cremation or Funeral Gallery
Permit #3116-00

I. Introduction

A. Site Location

A human crematorium located at 29 8th Street West in Billings, Montana. The legal description is Section 9, Township 1 South, Range 26 East in Yellowstone County, Montana

B. Existing Source Description

A 1996 B & L incinerator is used as a human crematorium. The incinerator/crematorium is fired on natural gas and has a maximum rated design capacity of 150 lb/hr of human remains.

C. Current Permit Action

This current permitting action is a transfer of permitting authority from Yellowstone County to the State of Montana. The facility has not changed its operation or configuration, but the existing Yellowstone County permit must be re-issued as a state permit. Permit #3116-00 replaces all Yellowstone County air quality permits and any other air quality permits held by Cremation or Funeral Gallery for this equipment.

II. Applicable Rules and Regulations

The following are partial explanations of some applicable rules and regulations that apply to the facility. The complete rules are stated in the Administrative Rules of Montana (ARM) and are available, upon request, from the Department of Environmental Quality (department). Upon request, the department will provide references for locations of complete copies of all applicable rules and regulations, or copies where appropriate.

A. ARM 17.8, Subchapter 1 – General Provisions, including, but not limited to:

1. ARM 17.8.105 Testing Requirements. Any person or persons responsible for the emission of any air contaminant into the outdoor atmosphere shall, upon written request of the department, provide the facilities and necessary equipment (including instruments and sensing devices) and shall conduct tests, emission or ambient, for such periods of time as may be necessary using methods approved by the department.
2. ARM 17.8.106 Source Testing Protocol. The requirements of this rule apply to any emission source testing conducted by the department, any source, or other entity as required by any rule in this chapter, or any permit or order issued pursuant to this chapter, or the provisions of the Clean Air Act of Montana, 75-2-101, *et seq.*, Montana Code Annotated (MCA).

Cremation or Funeral Gallery shall comply with the requirements contained in the Montana Source Test Protocol and Procedures Manual, including but not limited to, using the proper test methods and supplying the required reports. A copy of the Montana Source Test Protocol and Procedures Manual is available from the department upon request.

3. ARM 17.8.110 Malfunctions. The department must be notified promptly by telephone whenever a malfunction occurs that can be expected to create emissions in excess of any applicable emission limitation, or to continue for a period greater than 4 hours.

4. ARM 17.8.111 Circumvention. No person shall cause or permit the installation or use of any device or any means which, without resulting in reduction in the total amount of air contaminant emitted, conceals or dilutes an emission of air contaminant that would otherwise violate an air pollution control regulation. No equipment that may produce emissions shall be operated or maintained in such a manner that a public nuisance is created.

B. ARM 17.8, Subchapter 2 - Ambient Air Quality, including, but not limited to the following:

1. ARM 17.8.204 Ambient Air Monitoring Quality Assurance Procedures
2. ARM 17.8.210 Ambient Air Quality Standards for Sulfur Dioxide
3. ARM 17.8.211 Ambient Air Quality Standards for Nitrogen Dioxide
4. ARM 17.8.212 Ambient Air Quality Standards for Carbon Monoxide
5. ARM 17.8.213 Ambient Air Quality Standard for Ozone
6. ARM 17.8.214 Ambient Air Quality Standard for Hydrogen Sulfide
7. ARM 17.8.220 Ambient Air Quality Standard for Settled Particulate Matter
8. ARM 17.8.221 Ambient Air Quality Standard for Visibility
9. ARM 17.8.222 Ambient Air Quality Standard for Lead
10. ARM 17.8.223 Ambient Air Quality Standard for PM₁₀
11. ARM 17.8.230 Fluoride in Forage

Cremation or Funeral Gallery must comply with the applicable ambient air quality standards.

C. ARM 17.8, Subchapter 3 - Emission Standards, including, but not limited to:

1. ARM 17.8.308 Particulate Matter, Airborne. This rule requires an opacity limitation of 20% for all fugitive emission sources and that reasonable precautions be taken to control emissions of airborne particulate. Under this rule, Cremation or Funeral Gallery shall not cause or authorize the use of any street, road, or parking lot without taking reasonable precautions to control emissions of airborne particulate matter.
2. ARM 17.8.309 Particulate Matter, Fuel Burning Equipment. This rule states that emissions of particulate matter caused by the combustion of fuel shall not exceed the hourly rate set forth in this rule.
3. ARM 17.8.316 Incinerators. This rule requires that no person may cause or authorize to be discharged into the outdoor atmosphere from any incinerator, particulate matter in excess of 0.10 grains per standard cubic foot of dry flue gas, adjusted to 12% carbon dioxide and calculated as if no auxiliary fuel had been used. Also, no person shall cause or authorize to be discharged into the outdoor atmosphere from any incinerator, emissions that exhibit an opacity of 10% or greater averaged over 6 consecutive minutes. This rule does not apply to the 1996 B&L incinerator/crematorium because Cremation or Funeral Gallery applied for and received an air quality permit in accordance with ARM 17.8.706(5) and MCA 75-2-215.
4. ARM 17.8.340 New Source Performance Standards. This rule incorporates, by reference, 40 CFR Part 60, Standards of Performance for New Stationary Sources (NSPS). The owner or operator of any stationary source or modification, as defined and applied in 40 CFR Part 60, shall comply with the NSPS. Although the Cremation or Funeral Gallery incinerator/crematorium was constructed prior to August 17, 1971, it is not an NSPS affected source because it does not have a charging rate of 50 tons/day.

D. ARM 17.8, Subchapter 5 - Air Quality Permit Application, Operation and Open Burning Fees, including, but not limited to:

1. ARM 17.8.504 Air Quality Permit Application Fees. This rule requires that an applicant submit an air quality permit application fee concurrent with the submittal of an air quality permit application. A permit application is incomplete until the proper application fee is paid to the department. The current permitting action is a transfer of permitting authority from Yellowstone County to the State of Montana. Cremation or Funeral Gallery was not required to submit an application fee for this permitting action.
2. ARM 17.8.505 Air Quality Operation Fees. An annual air quality operation fee must, as a condition of continued operation, be submitted to the department by each source of air contaminants holding an air quality permit, excluding an open burning permit, issued by the department; and the air quality operation fee is based on the actual or estimated amount of air pollutants emitted during the previous calendar year.

An air quality operation fee is separate and distinct from an air quality permit application fee. The annual assessment and collection of the air quality operation fee, described above, shall take place on a calendar-year basis. The department may insert into any final permit, issued after the effective date of these rules, such conditions as may be necessary to require the payment of an air quality operation fee on a calendar-year basis, including provisions which pro-rate the required fee amount.

E. ARM 17.8, Subchapter 7 - Permit, Construction and Operation of Air Contaminant Sources, including, but not limited to:

1. ARM 17.8.704 General Procedures for Air Quality Preconstruction Permitting. This air quality preconstruction permit contains requirements and conditions applicable to both construction and subsequent use.
2. ARM 17.8.705 When Permit Required--Exclusions. This rule requires a facility to obtain an air quality permit or permit alteration if they construct, alter, or use an air contaminant source having the potential to emit more than 25 tons per year of any pollutant. While Cremation or Funeral Gallery does not have the potential to emit more than 25 tons per year of any pollutant, an air quality permit was required under the requirements of MCA 75-2-215. Because Cremation or Funeral Gallery obtained an air quality permit, all normally applicable requirements apply in this case.
3. ARM 17.8.706 New or Altered Sources and Stacks--Permit Application Requirements. This rule requires that an application for an air quality permit be submitted for a new or altered source or stack. The current permit action is a transfer of permitting authority from Yellowstone County to the State of Montana and there were no sources or stacks either added or altered; therefore, a permit application was not required.
4. ARM 17.8.707 Waivers. This rule requires the permit application be submitted 180 days before construction begins. This rule allows the department to waive this time limit. The department hereby waives this limit.
5. ARM 17.8.710 Conditions for Issuance of Permit. This rule requires that the source demonstrate compliance with applicable rules and standards before a permit can be issued. In addition, a permit may be issued with such conditions as are necessary to assure compliance with all applicable rules and standards. Cremation or Funeral Gallery has demonstrated compliance with applicable rules and standards as required for permit issuance.

6. ARM 17.8.715 Emission Control Requirements. This rule requires a facility to install on a new or altered source the maximum air pollution control capability which is technically practicable and economically feasible, except that BACT shall be utilized. The current permit action is a transfer of permitting authority from Yellowstone County to the State of Montana. A BACT analysis was conducted for sources at this facility. The BACT analysis can be found in Section III of the permit analysis.
 7. ARM 17.8.716 Inspection of Permit. This rule requires that air quality permits shall be made available for inspection by the department at the location of the source.
 8. ARM 17.8.717 Compliance with Other Statutes and Rules. This rule states that nothing in the permit shall be construed as relieving Cremation or Funeral Gallery of the responsibility for complying with any applicable federal or Montana statute, rule or standard, except as specifically provided in ARM 17.8.101, *et seq.*
 9. ARM 17.8.720 Public Review of Permit Applications. This rule requires that the applicant notify the public by means of legal publication in a newspaper of general circulation in the area affected by the application for a permit. The current permit action is a transfer of permitting authority from Yellowstone County to the State of Montana and does not require submittal of an affidavit of publication of public notice.
 10. ARM 17.8.731 Duration of Permit. An air quality permit shall be valid until revoked or modified as provided in this subchapter, except that a permit issued prior to construction of a new or altered source may contain a condition providing that the permit will expire unless construction is commenced within the time specified in the permit, which in no event may be less than 1 year after the permit is issued.
 11. ARM 17.8.733 Modification of Permit. An air quality permit may be modified for changes in any applicable rules and standards adopted by the board or changed conditions of operation at a source or stack that do not result in an increase in emissions because of those changed conditions. A source may not increase its emissions beyond those found in its permit unless the source applies for and receives another permit.
 12. ARM 17.8.734 Transfer of Permit. This rule states an air quality permit may be transferred from one person to another if written notice of intent to transfer, including the names of the transferor and the transferee, is sent to the department.
- F. ARM 17.8, Subchapter 8 - Prevention of Significant Deterioration of Air Quality, including, but not limited to:

ARM 17.8.818 Review of Major Stationary Sources and Major Modifications--Source Applicability and Exemptions. The requirements contained in ARM 17.8.819 through 17.8.827 shall apply to any major stationary source and any major modification, with respect to each pollutant subject to regulation under the Federal Clean Air Act (FCAA) that it would emit, except as this subchapter would otherwise allow.

This facility is not a PSD source because it is not listed and it does not have the potential to emit above 250 tons per year (excluding fugitive emissions) of any pollutant. Therefore, a PSD review is not required.

G. ARM 17.8, Subchapter 12 - Operating Permit Program Applicability, including, but not limited to:

1. ARM 17.8.1201 Definitions. (23) Major Source under Section 7412 of the Federal Clean Air Act (FCAA) is defined as any stationary source having:
 - a. Potential to Emit (PTE) > 10 tons/year of any one hazardous air pollutant (HAP), PTE > 25 tons/year of a combination of all HAPs, or lesser quantity as the department may establish by rule,
 - b. PTE > 100 tons/year of any pollutant, and
 - c. Sources with the PTE > 70 tons/year of PM₁₀ in a serious PM₁₀ non-attainment area.
2. ARM 17.8.1204 Air Quality Operating Permit Program Applicability. Title V of the FCAA Amendments of 1990 requires that all sources, as defined in ARM 17.8.1204(1), obtain a Title V Operating Permit. In reviewing and issuing Air Quality Permit #3116-00 for Cremation or Funeral Gallery, the following conclusions were made.
 - a. The facility's PTE is less than 100 tons/year for any pollutant.
 - b. The facility's PTE is less than 10 tons/year for any single HAP and less than 25 tons/year for all HAPs.
 - c. This source is not located in a serious PM₁₀ non-attainment area.
 - d. This facility is not subject to any current NSPS.
 - e. This facility is not subject to any current NESHAP standards.
 - f. This source is not a Title IV affected source, nor a solid waste combustion unit.
 - g. This source is not an EPA designated Title V source.

Therefore, a Title V Operating Permit is not required.

H. MCA 75-2-215, Solid or Hazardous Waste Incineration - Additional permit requirements:

1. MCA 75-2-215 requires air quality permits for all new commercial solid waste incinerators. Cremation or Funeral Gallery obtained an air quality permit.
2. MCA 75-2-215 requires the applicant to provide, to the department's satisfaction, a characterization and estimate of emissions and ambient concentrations of air pollutants, including hazardous air pollutants, from the incineration of solid waste. The information in the initial permit application fulfilled this requirement.
3. MCA 75-2-215 requires that the department reach a determination that the projected emissions and ambient concentrations constitute a negligible risk to public health, safety and welfare. The department completed a health risk assessment, based on an emissions inventory and ambient air quality modeling, for this permitting action.

4. MCA 75-2-215 requires the application of pollution control equipment or procedures that meet or exceed BACT. The current permit action is a transfer of permitting authority from Yellowstone County to the State of Montana. A BACT analysis was conducted for sources at this facility. The BACT analysis can be found in Section III of the permit analysis.

III. Best Available Control Technology Analysis

A BACT determination is required for each new or altered source. Cremation or Funeral Gallery shall install on the new or altered source the maximum air pollution control capability which is technically practicable and economically feasible, except that best available control technology shall be utilized. In addition, MCA 75-2-215 requires a BACT determination for all pollutants, not just criteria pollutants. The department accepts the original BACT determination done as part of Cremation or Funeral Gallery's Yellowstone County Permit.

IV. Emission Inventory

TABLE 1. AIR POLLUTANTS (tons / year)						
Emission Unit	TSP	PM ₁₀	SO _x	NO _x	VOC	CO
B & L Crematorium	2.63	1.94	2.63	0.99	0.99	0.00
Natural Gas Fuel	3.94E-2	3.94E-2	7.9E-3	1.31	6.96E-2	2.63E-1
Total Emissions	2.67	1.98	2.64	2.3	1.06	2.63E-1

1996 B & L Incinerator/Crematorium

TSP Emissions

Emission Factor: 8.00 lb/ton {AFSSCC 5-02-005-05, pg 227}
Control Efficiency: 0.0 %
Fuel Consumption: 657.00 tons/year (Maximum Rated Design)
Calculations: 657.00 tons/year * 8 lb/ton * 0.0005 ton/lb = 2.63 tons/yr

PM₁₀ Emissions

Emission Factor: 5.92 lb/ton {AFSSCC 5-02-005-05, pg 227}
Control Efficiency: 0.0 %
Fuel Consumption: 657.00 tons/year (Maximum Rated Design)
Calculations: 657.00 tons/year * 5.92 lb/ton * 0.0005 ton/lb = 1.94 tons/yr

NO_x Emissions

Emission Factor: 3.00 lb/ton {AFSSCC 5-02-005-05, pg 227}
Control Efficiency: 0.0 %
Fuel Consumption: 657.00 tons/year (Maximum Rated Design)
Calculations: 657.00 tons/year * 3.00 lb/ton * 0.0005 ton/lb = 0.99 tons/yr

VOC Emissions

Emission Factor: 3.00 lb/ton {AFSSCC 5-02-005-05, pg 227}
Control Efficiency: 0.0 %
Fuel Consumption: 657.00 tons/year (Maximum Rated Design)
Calculations: 657.00 tons/year * 3.00 lb/ton * 0.0005 ton/lb = 0.99 tons/yr

CO Emissions

Emission Factor: 0.00 lb/ton {AFSSCC 5-02-005-05, pg 227}
Control Efficiency: 0.0 %
Fuel Consumption: 657.00 tons/year (Maximum Rated Design)
Calculations: 657.00 tons/year * 0.00 lb/ton * 0.0005 ton/lb = 0.00 tons/yr

SO_x Emissions
 Emission Factor: 8.00 lb/ton { AFSSCC 5-02-005-05, pg 227 }
 Control Efficiency: 0.0 %
 Fuel Consumption: 657.00 tons/year (Maximum Rated Design)
 Calculations: $657.00 \text{ tons/year} * 8.00 \text{ lb/ton} * 0.0005 \text{ tons/lb} = 2.63 \text{ tons/yr}$

Natural Gas Fuel

TSP Emissions
 Emission Factor: 3.00 lb/MMscf { AFSSCC 1-02-006-03, pg 23 }
 Control Efficiency: 0.0 %
 Fuel Consumption: 3.00 MMBtu/hr (Maximum Rated Design)
 Calculations: $3.00 \text{ MMBtu/hr} * 1 \text{ scf/1000 btu} * 3.00 \text{ lb/MMscf} = 0.0090 \text{ lb/hr}$
 $0.0090 \text{ lb/hr} * 0.0005 \text{ ton/lb} * 8760 \text{ hr/yr} = 3.94\text{E-}2 \text{ tons/yr}$

PM₁₀ Emissions
 Emission Factor: 3.00 lb/MMscf { AFSSCC 1-02-006-03, pg 23 }
 Control Efficiency: 0.0 %
 Fuel Consumption: 3.00 MMBtu/hr (Maximum Rated Design)
 Calculations: $3.00 \text{ MMBtu/hr} * 1 \text{ scf/1000 btu} * 3.00 \text{ lb/MMscf} = 0.0090 \text{ lb/hr}$
 $0.0090 \text{ lb/hr} * 0.0005 \text{ ton/lb} * 8760 \text{ hr/yr} = 3.94\text{E-}2 \text{ tons/yr}$

NO_x Emissions
 Emission Factor: 100.00 lb/MMscf { AFSSCC 1-02-006-03, pg 23 }
 Control Efficiency: 0.0 %
 Fuel Consumption: 3.00 MMBtu/hr (Maximum Rated Design)
 Calculations: $3.00 \text{ MMBtu/hr} * 1 \text{ scf/1000 btu} * 100 \text{ lb/MMscf} = 0.30 \text{ lb/hr}$
 $0.30 \text{ lb/hr} * 0.0005 \text{ ton/lb} * 8760 \text{ hr/yr} = 1.31 \text{ tons/yr}$

VOC Emissions
 Emission Factor: 5.30 lb/MMscf { AFSSCC 1-02-006-03, pg 23 }
 Control Efficiency: 0.0 %
 Fuel Consumption: 3.00 MMBtu/hr (Maximum Rated Design)
 Calculations: $3.00 \text{ MMBtu/hr} * 1 \text{ scf/1000 btu} * 5.30 \text{ lb/MMscf} = 0.0159 \text{ lb/hr}$
 $0.0159 \text{ lb/hr} * 0.0005 \text{ ton/lb} * 8760 \text{ hr/yr} = 6.96\text{E-}2 \text{ tons/yr}$

CO Emissions
 Emission Factor: 20.00 lb/MMscf { AFSSCC 1-02-006-03, pg 23 }
 Control Efficiency: 0.0 %
 Fuel Consumption: 3.00 MMBtu/hr (Maximum Rated Design)
 Calculations: $3.00 \text{ MMBtu/hr} * 1 \text{ scf/1000 btu} * 20.00 \text{ lb/MMscf} = 0.06 \text{ lb/hr}$
 $0.06 \text{ lb/hr} * 0.0005 \text{ ton/lb} * 8760 \text{ hr/yr} = 2.63\text{E-}1 \text{ tons/yr}$

SO_x Emissions
 Emission Factor: 0.60 lb/MMscf { AFSSCC 1-02-006-03, pg 23 }
 Control Efficiency: 0.0 %
 Fuel Consumption: 3.00 MMBtu/hr (Maximum Rated Design)
 Calculations: $3.00 \text{ MMBtu/hr} * 1 \text{ scf/1000 btu} * 0.60 \text{ lb/MMscf} = 0.0018 \text{ lb/hr}$
 $0.0018 \text{ lb/hr} * 0.0005 \text{ ton/lb} * 8760 \text{ hr/yr} = 7.9\text{E-}3 \text{ tons/yr}$

HAZARDOUS AIR POLLUTANTS

Bromoform

Emission Factor: 2.90 E-5 lb/ton { AFSSCC 5-02-005-05, pg 227 }
 Control Efficiency: 0.0 %
 Fuel Consumption: 657.00 ton/yr (Maximum Rated Design)
 Calculations: $657.00 \text{ ton/yr} * 2.90 \text{ E-5 lb/ton} = 1.91\text{E-2 lb/yr}$
 $1.91\text{E-2 lb/yr} * 1 \text{ g/0.002205 lb} = 8.64 \text{ g/yr}$
 $8.64 \text{ g/yr} * 1 \text{ yr/8760 hr} * 1 \text{ hr/60 min} * 1 \text{ min/60 s} = 2.74\text{E-7 g/s}$

Carbon Tetrachloride

Emission Factor: 5.74 E-5 lb/ton { AFSSCC 1-02-009-01 }
 Control Efficiency: 0.0 %
 Fuel Consumption: 657.00 ton/yr (Maximum Rated Design)
 Calculations: $657.00 \text{ ton/yr} * 5.74 \text{ E-5 lb/ton} = 3.77\text{E-2 lb/yr}$
 $3.77\text{E-2 lb/yr} * 1 \text{ g/0.002205 lb} = 17.10 \text{ g/yr}$
 $17.10 \text{ g/yr} * 1 \text{ yr/8760 hr} * 1 \text{ hr/60 min} * 1 \text{ min/60 s} = 5.42\text{E-7 g/s}$

Chloroform

Emission Factor: 5.45 E-5 lb/ton { AFSSCC 1-02-009-01 }
 Control Efficiency: 0.0 %
 Fuel Consumption: 657.00 ton/yr (Maximum Rated Design)
 Calculations: $657.00 \text{ ton/yr} * 5.45 \text{ E-5 lb/ton} = 3.58\text{E-2 lb/yr}$
 $3.58\text{E-2 lb/yr} * 1 \text{ g/0.002205 lb} = 16.24 \text{ g/yr}$
 $16.24 \text{ g/yr} * 1 \text{ yr/8760 hr} * 1 \text{ hr/60 min} * 1 \text{ min/60 s} = 5.15\text{E-7 g/s}$

1,2-Dichloropropane

Emission Factor: 1.32 E-3 lb/ton { AFSSCC 1-02-009-01 }
 Control Efficiency: 0.0 %
 Fuel Consumption: 657.00 ton/yr (Maximum Rated Design)
 Calculations: $657.00 \text{ ton/yr} * 1.32 \text{ E-3 lb/ton} = 8.67\text{E-1 lb/yr}$
 $8.67\text{E-1 lb/yr} * 1 \text{ g/0.002205 lb} = 393.31 \text{ g/yr}$
 $393.31 \text{ g/yr} * 1 \text{ yr/8760 hr} * 1 \text{ hr/60 min} * 1 \text{ min/60 s} = 1.25\text{E-5 g/s}$

Ethyl Benzene

Emission Factor: 1.61 E-3 lb/ton { AFSSCC 1-02-009-01 }
 Control Efficiency: 0.0 %
 Fuel Consumption: 657.00 ton/yr (Maximum Rated Design)
 Calculations: $657.00 \text{ ton/yr} * 1.61 \text{ E-3 lb/ton} = 1.06 \text{ lb/yr}$
 $1.06 \text{ lb/yr} * 1 \text{ g/0.002205 lb} = 479.71 \text{ g/yr}$
 $479.71 \text{ g/yr} * 1 \text{ yr/8760 hr} * 1 \text{ hr/60 min} * 1 \text{ min/60 s} = 1.52\text{E-5 g/s}$

Naphthalene

Emission Factor: 1.16 E-2 lb/ton { AFSSCC 1-02-009-01 }
 Control Efficiency: 0.0 %
 Fuel Consumption: 657.00 ton/yr (Maximum Rated Design)
 Calculations: $657.00 \text{ ton/yr} * 1.16 \text{ E-2 lb/ton} = 7.62 \text{ lb/yr}$
 $7.62 \text{ lb/yr} * 1 \text{ g/0.002205 lb} = 3456.33 \text{ g/yr}$
 $3456.33 \text{ g/yr} * 1 \text{ yr/8760 hr} * 1 \text{ hr/60 min} * 1 \text{ min/60 s} = 1.00\text{E-4 g/s}$

Tetrachloroethylene

Emission Factor: 4.03 E-05 lb/ton { AFSSCC 1-02-009-01 }
 Control Efficiency: 0.0 %
 Fuel Consumption: 657.00 ton/yr (Maximum Rated Design)
 Calculations: $657.00 \text{ ton/yr} * 4.03 \text{ E-05 lb/ton} = 2.65\text{E-2 lb/yr}$

$2.65\text{E-}2 \text{ lb/yr} * 1 \text{ g}/0.002205 \text{ lb} = 12.01 \text{ g/yr}$
 $12.01 \text{ g/yr} * 1 \text{ yr}/8760 \text{ hr} * 1 \text{ hr}/60 \text{ min} * 1 \text{ min}/60 \text{ s} = 3.81\text{E-}7 \text{ g/s}$

1,1,2,2-Tetrachloroethane

Emission Factor: $1.10 \text{ E-}4 \text{ lb/ton}$ {AFSSCC 1-02-009-01}
 Control Efficiency: 0.0 %
 Fuel Consumption: 657.00 ton/yr (Maximum Rated Design)
 Calculations: $657.00 \text{ ton/yr} * 1.10 \text{ E-}4 \text{ lb/ton} = 7.23\text{E-}2 \text{ lb/yr}$
 $7.23\text{E-}2 \text{ lb/yr} * 1 \text{ g}/0.002205 \text{ lb} = 32.78 \text{ g/yr}$
 $32.78 \text{ g/yr} * 1 \text{ yr}/8760 \text{ hr} * 1 \text{ hr}/60 \text{ min} * 1 \text{ min}/60 \text{ s} = 1.04\text{E-}6 \text{ g/s}$

Toluene

Emission Factor: $4.62 \text{ E-}3 \text{ lb/ton}$ {AFSSCC 1-02-009-01}
 Control Efficiency: 0.0 %
 Fuel Consumption: 657.00 ton/yr (Maximum Rated Design)
 Calculations: $657.00 \text{ ton/yr} * 4.62 \text{ E-}3 \text{ lb/ton} = 3.04 \text{ lb/yr}$
 $3.04 \text{ lb/yr} * 1 \text{ g}/0.002205 \text{ lb} = 1376.57 \text{ g/yr}$
 $1376.57 \text{ g/yr} * 1 \text{ yr}/8760 \text{ hr} * 1 \text{ hr}/60 \text{ min} * 1 \text{ min}/60 \text{ s} = 4.37\text{E-}5 \text{ g/s}$

Vinylidene Chloride

Emission Factor: $7.10 \text{ E-}5 \text{ lb/ton}$ {AFSSCC 1-02-009-01}
 Control Efficiency: 0.0 %
 Fuel Consumption: 657.00 ton/yr (Maximum Rated Design)
 Calculations: $657.00 \text{ ton/yr} * 7.10 \text{ E-}5 \text{ lb/ton} = 4.66\text{E-}2 \text{ lb/yr}$
 $4.66\text{E-}2 \text{ lb/yr} * 1 \text{ g}/0.002205 \text{ lb} = 21.16 \text{ g/yr}$
 $21.16 \text{ g/yr} * 1 \text{ yr}/8760 \text{ hr} * 1 \text{ hr}/60 \text{ min} * 1 \text{ min}/60 \text{ s} = 6.71\text{E-}7 \text{ g/s}$

Xylene

Emission Factor: $2.20 \text{ E-}3 \text{ lb/ton}$ {AFSSCC 1-02-009-01}
 Control Efficiency: 0.0 %
 Fuel Consumption: 657.00 ton/yr (Maximum Rated Design)
 Calculations: $657.00 \text{ ton/yr} * 2.20 \text{ E-}3 \text{ lb/ton} = 1.45 \text{ lb/yr}$
 $1.45 \text{ lb/yr} * 1 \text{ g}/0.002205 \text{ lb} = 655.51 \text{ g/yr}$
 $655.51 \text{ g/yr} * 1 \text{ yr}/8760 \text{ hr} * 1 \text{ hr}/60 \text{ min} * 1 \text{ min}/60 \text{ s} = 2.08\text{E-}5 \text{ g/s}$

V. Air Quality Impacts

The facility is located at 29 8th St. West in Billings, Montana. Yellowstone County is unclassifiable/attainment for the National Ambient Air Quality Standards (NAAQS) for all criteria pollutants except carbon monoxide (CO) and sulfur dioxide (SO₂). Laurel has been designated as a nonattainment area for SO₂, and Billings has been designated as a nonattainment area for CO. The current permit action is a transfer of permitting authority from Yellowstone County to the State of Montana and does not increase emissions from the facility.

The department ran SCREEN3, an Environmental Protection Agency (EPA) approved screening model, using the indicated inputs obtained from the permit application and an emission rate of 2.00E-4 grams per second, which is the sum of all the air toxic emissions. The individual 1-hour results for each pollutant were then calculated prorating the actual emission rate in grams per second against the 2.00E-4 grams per second calculated ambient impact of 0.0202 µg/m³. The maximum 1-hour concentrations were then used in the risk assessment.

SCREEN3 Model Run

Simple Terrain Inputs:		
Source Type	=	POINT
Emission Rate (G/S)	=	2.00E-4 g/s
Stack Height (M)	=	9.14 m
Stack Inside Diameter (M)	=	0.61 m
Stack Exit Velocity (M/S)	=	5.89 m/s
Ambient Air Temperature (K)	=	293
Receptor Height (M)	=	0.00

Urban/Rural Option

= Urban

Stack exit velocity and stack gas exit temperature was taken from a similar source because they were not submitted on the application.

Full meteorology, screen automated distances, and a terrain height of 0.0 m above the stack base were used. Table 2 summarizes the results of the screen model.

TABLE 2. Summary of Screen Model Results			
Calculation Procedure	Maximum Concentration ($\mu\text{g}/\text{m}^3$)	Distance of Maximum (m)	Terrain Height (m)
Simple Terrain	0.2021E-1	101.00	0.00

VI. Health Risk Assessment

A health risk assessment was conducted for this permitting action to determine if the incinerator/crematorium complied with the negligible risk requirement of MCA 75-2-215. The emission inventory did not contain sufficient quantities of any pollutant on the department's list of pollutants for which non-inhalation impacts had to be considered; therefore, the department determined that inhalation risk was the only pathway to consider. Only those hazardous air pollutants (HAPS) for which there were established emission factors were considered in the emission inventory, listed in Table 3. The department considers the risks estimated in the risk assessment (see Table 3) to comply with the requirement to demonstrate negligible risk to human health and the environment.

TABLE 3. HAPS Inhalation Health Risk Assessment					
Chemical Compound	% of total concentration ¹	Annual Concentration ² ($\mu\text{g}/\text{m}^3$)	Cancer ELCR ³ Chronic	Non – Cancer Hazard Quotient (NCHQ ⁴)	
				Chronic	Acute
Bromoform	0.14	2.83E-6	3.11E-12	0.0000	0.0000
Carbon Tetrachloride	0.27	5.46E-6	8.19E-11	1.31E-5	0.0000
Chloroform	0.26	5.25E-6	1.21E-10	1.84E-6	0.0000
1,2 Dichloropropane	6.35	1.00E-4	0.00	0.0000	0.0000
Ethyl Benzene	7.60	2.00E-4	0.00	0.0000	0.0000
Napthalene	50.00	1.00E-3	0.00	1.40E-2	0.0000
Tetrachloroethylene	0.19	3.84E-6	2.27E-11	1.00E-4	0.0000
1,1,2,2 Tetrachloroethane	0.52	1.05E-5	6.09E-10	0.0000	0.0000
Toluene	21.85	4.00E-4	0.00	1.60E-1	0.0000
Vinylidene Chloride	0.34	6.87E-6	3.44E-10	2.00E-4	0.0000
Xylene	10.45	2.00E-4	0.00	6.00E-2	0.0000
Total Risks	N/A	N/A	1.18E-9	0.2343	0.0000

¹ % of total concentration = emission rate each pollutant/sum of all pollutants emission rates (2.00E-4)

² annual concentration = (max 1-hr conc. from model * 0.1 * % of total)/100-or-(0.2021E-1 * 0.1 * % of total)/100

³ ELCR = excess lifetime cancer risks = Annual Concentration * Cancer Potency Factor

⁴ NCHQ = annual concentration/Risk Factor Concentration

The department considers the risks estimated in the risk assessment to be in compliance with the requirement to demonstrate negligible risk to the public health.

VII. Taking or Damaging Implication Analysis

As required by 2-10-101 through 105, MCA, the department has conducted a private property taking and damaging assessment and has determined there are no taking or damaging implications.

VIII. Environmental Assessment

An environmental assessment, required by the Montana Environmental Policy Act, was completed for this permitting action. A copy is attached.

DEPARTMENT OF ENVIRONMENTAL QUALITY
Permitting and Compliance Division
Air and Waste Management Bureau
P.O. Box 200901, Helena, Montana 59620
(406) 444-3490

FINAL ENVIRONMENTAL ASSESSMENT (EA)

Issued For: Cremation or Funeral Gallery
29 8th St. West
Billings, Montana 59101-2914

Air Quality Permit Number: #3116-00

Preliminary Determination Issued: January 26, 2001

Department Decision Issued: February 13, 2001

Final Permit Issued: March 1, 2001

Montana Environmental Policy Act (MEPA) compliance: An environmental assessment, required by MEPA, was completed for this project as follows.

1. *Legal Description of Site:* The Cremation or Funeral Gallery facility is located at 29 8th Street West in Billings, Montana. The legal description is Section 9, Township 1 South, Range 26 East in Yellowstone County, Montana
2. *Description of Project:* The current permitting action is a transfer of permitting authority from Yellowstone County to the State of Montana.
3. *Objectives of Project:* Issuance of this permit will allow Cremation or Funeral Gallery to continue their operation in compliance with the Administrative Rules of Montana.
4. *Alternatives Considered:* In addition to the proposed action, the department also considered the "no-action" alternative. The "no-action" alternative would deny the issuance of the air quality preconstruction permit to the proposed facility. However, the department does not consider the "no-action" alternative to be appropriate because Cremation or Funeral Gallery has demonstrated compliance with all applicable rules and regulations as required for permit issuance. Therefore, the "no-action" alternative was eliminated from further consideration.
5. *A Listing of Mitigation, Stipulations, and Other Controls:* A listing of the enforceable permit conditions and a permit analysis, including a Best Available Control Technology analysis, is contained in Permit #3116-00.
6. *Regulatory Effects on Private Property:* The department has considered alternatives to the conditions imposed in this permit as part of the permit development. The department has determined that the permit conditions are reasonably necessary to ensure compliance with applicable requirements and demonstrates compliance with those requirements and do not unduly restrict private property rights.

7. The following table summarizes the potential physical and biological effects of the proposed project on the human environment. The "no-action" alternative was discussed previously.

		Major	Moderate	Minor	None	Unknown	Comments Included
A	Terrestrial and Aquatic Life and Habitats				X		Yes
B	Water Quality, Quantity, and Distribution				X		Yes
C	Geology and Soil Quality, Stability, and Moisture				X		Yes
D	Vegetation Cover, Quantity, and Quality				X		Yes
E	Aesthetics			X			Yes
F	Air Quality			X			Yes
G	Unique Endangered, Fragile, or Limited Environmental Resource				X		Yes
H	Demands on Environmental Resource of Water, Air, and Energy				X		Yes
I	Historical and Archaeological Sites				X		Yes
J	Cumulative and Secondary Impacts				X		Yes

SUMMARY OF COMMENTS ON POTENTIAL PHYSICAL AND BIOLOGICAL EFFECTS: The following comments have been prepared by the department.

A. Terrestrial and Aquatic Life and Habitats

Terrestrials would use the same areas in which the crematorium operation occurs. However, the current permit action is for the continued operation of an established crematorium and would not have additional impact on the terrestrial life.

B. Water Quality, Quantity, and Distribution

The proposed project would have no impacts on water quality, quantity, and distribution. The current permit action is for the continued operation of an established crematorium operation.

C. Geology and Soil Quality, Stability, and Moisture

The department has determined that the current permitting action would have no additional impact to the soils around the facility. The current permitting action is for the continued operation of an established crematorium. No additional land would be disturbed as a result of this permit action.

D. Vegetation Cover, Quantity, and Quality

The department has determined that the current permitting action would have no additional impact on the vegetative cover around the facility. The current permitting action is for the continued operation of an established crematorium. No additional land would be disturbed as a result of this permit action.

E. Aesthetics

The department has determined that there may be visible emissions from the operation of the crematorium; however, any impacts would be minor because the crematorium would be limited by permit #3116-00 to an opacity of 10%. The current permitting action is for the continued operation of an established crematorium.

F. Air Quality

The department has determined that the air quality impacts from the crematorium would be minor. Permit #3116-00 would include conditions limiting the opacity from the crematorium to 10% and particulate matter to 0.10 gr/dscf corrected to 12% CO₂. The current permitting action is for the continued operation of an established crematorium.

G. Unique Endangered, Fragile, or Limited Environmental Resources

The department has determined that the current permitting action would not affect any unique, endangered, fragile, or limited environmental resources. The current permitting action is for the continued operation of an established Crematorium

H. Demands on Environmental Resource of Water, Air, and Energy

The department has determined that the current permitting action would have no additional impacts to environmental resource of water, air, or energy. The current permitting action is for the continued operation of an established crematorium.

I. Historical and Archaeological Sites

The department has determined that the current permitting action would have no impact to historical and archaeological sites around the facility. The current permitting action is for the continued operation of an established crematorium.

J. Cumulative and Secondary Impacts

The department has determined that the current permitting action would not result in any additional cumulative and secondary impacts. The current permitting action is for the continued operation of an established crematorium.

8. The following table summarizes the potential social and economic effects of the proposed project on the human environment. The "no-action" alternative was discussed previously.

		Major	Moderate	Minor	None	Unknown	Comments Included
A	Social Structures and Mores				X		Yes
B	Cultural Uniqueness and Diversity				X		Yes
C	Local and State Tax Base and Tax Revenue				X		Yes
D	Agricultural or Industrial Production				X		Yes
E	Human Health				X		Yes
F	Access to and Quality of Recreational and Wilderness Activities				X		Yes
G	Quantity and Distribution of Employment				X		Yes
H	Distribution of Population				X		Yes
I	Demands for Government Services				X		Yes
J	Industrial and Commercial Activity				X		Yes
K	Locally Adopted Environmental Plans and Goals				X		Yes
L	Cumulative and Secondary Impacts				X		Yes

SUMMARY OF COMMENTS ON POTENTIAL SOCIAL AND ECONOMIC EFFECTS: The following comments have been prepared by the department.

A. Social Structures and Mores

The proposed project would have no effect on the social structures or mores in the surrounding area.

B. Cultural Uniqueness and Diversity

The proposed project would have no effect on the cultural uniqueness and diversity in the surrounding area.

C. Local and State Tax Base and Tax Revenue

The proposed project would have no additional effect on the local and state tax base and tax revenue in the surrounding area. The current permitting action is for the continued operation of an established crematorium.

D. Agricultural or Industrial Production

The proposed project would not create any agricultural or industrial production.

E. Human Health

There would be no impacts on human health due to emissions from the proposed facility because the air quality preconstruction permit would incorporate conditions to ensure that the proposed facility would be operated in compliance with all applicable rules and standards. These rules and standards are designed to be protective of human health.

F. Access to and Quality of Recreational and Wilderness Activities

The proposed project would have no effect on the access to and quality of recreational and wilderness activities in the surrounding area. The current permitting action is for the continued operation of an established crematorium.

G. Quantity and Distribution of Employment

The proposed project would have no effect on the quantity and distribution of employment in the surrounding area. The current permitting action is for the continued operation of an established crematorium.

H. Distribution of Population

The proposed project would have no effect on the distribution of population in the surrounding area. The current permitting action is for the continued operation of an established crematorium.

I. Demands of Government Services

The proposed project would have no effect on the demands of government services in the surrounding area. The current permitting action is for the continued operation of an established crematorium.

J. Industrial and Commercial Activity

The proposed project would allow Cremation or Funeral Gallery to continue their cremation operations in compliance with the Administrative Rules of Montana. There would be no overall impacts to industrial and commercial activity. The current permitting action is for the continued operation of an established crematorium.

K. Locally Adopted Environmental Plans and Goals

The department is unaware of any locally adopted environmental plans and goals that would be affected by the proposed project. The state rules and standards would protect the surrounding area.

L. Cumulative and Secondary Impacts

Overall, there would be no cumulative and secondary impacts from this project. The current permitting action is for the continued operation of an established crematorium.

Other groups or agencies contacted or which may have overlapping jurisdiction: None

Individuals or groups contributing to this EA: Department of Environmental Quality, Air and Waste Management Bureau.

EA prepared by: David Aguirre

Date: January 1, 2001